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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,040	02/05/2007	Yasuo Okamoto	Q79258	6750

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WASHINGTON, DC 20037

EXAMINER
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LEE, REBECCA Y

ART UNIT	PAPER NUMBER
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1734

NOTIFICATION DATE	DELIVERY MODE
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03/02/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/583,040	<b>Applicant(s)</b> OKAMOTO, YASUO	
	<b>Examiner</b> REBECCA LEE	<b>Art Unit</b> 1734	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2011.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,8,9,11-16 and 20 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 14-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,8,9,11-13 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4-5, 8-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamio et al. (JP 2000265232) in view of Sakamoto et al. (JP 64039339) and Yanagimoto et al. (US 20040261615).

Regarding claims 1, 4-5, 8-9 and 12, Kamio et al. teach a process of producing an aluminum-alloy shaped product after continuous casting the aluminum alloy comprising preheat treatment at a temperature of 490-510 °C for 3 to 5 hours (claim 2); heating (forging) the forging material during a course of forging at 400-500°C (claim 2) and a step of post-heat treatment at 190-200 °C for 5 to 7 hours without performing solid solution treatment (claim 4).

Even though the claimed preheat temperature range and the range disclosed by Kamio et al. do not overlap, a prima facie case still exists where the claimed range and the range disclosed by the prior art are close enough that one skilled in the art would have expected the same result MPEP 2144.05 I.

In addition, it is well held that discovering an optimum value of a result effective variable requires only routine skill in the art. In the instant case, the pre-heating

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(homogenizing) temperature is a result effective variable since it affects the forgeability of the forging material and the uniformity of mechanical characteristics of the forged aluminum alloy product, as evidenced by Yanagimoto et al. (section 0082). Thus, one of ordinary skill in the art would have optimized the pre-heating (homogenizing) temperature in the process of Kamio et al. in view of Sakamoto et al. in order to achieve desired forgeability of the forging material and the uniformity of mechanical characteristics of the forged aluminum alloy product.

Kamio et al. do not expressly teach the continuously cast rod of aluminum alloy with the claimed composition.

Sakamoto et al. disclose a continuously cast rod of an aluminum alloy, which is suitable for forging, with a composition relative to that of the claimed invention, in weight percent, as shown below (abstract and page 6, lines 19-20):

Element	Instant claims	Sakamoto et al.	overlap
Si	10.5-13.5	7.5-22	10.5-13.5
Fe	0.15-0.65	0.25-1.0	0.25-0.65
Cu	2.5-5.5	3.0-7.0	3.0-5.5
Mg	0.5-1.3	0.3-1.0	0.5-1.0
Ni	0.8-3	0.3-2.0	0.8-2.0
Sr	0.003-0.03	0.005-0.1	0.005-0.03
Mn	0.1-1.0	0.25-1.0	0.25-1.0
Al	balance	balance	balance

It would have been obvious to one of ordinary skill in the art to use the aluminum alloy cast rod of Sakamoto et al. in the process of Kamio et al. since Sakamoto et al. teach that such an aluminum alloy exhibit excellent wear resistance and forgeability by casting and heat-treating (abstract).

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In addition, the amounts of Si, Fe, Cu, Mg, Ni, Sr, Mn and Al disclosed by Kamio et al. in view of Sakamoto et al. overlap the claimed amounts of Si, Fe, Cu, Mg, Ni, Sr, Mn and Al of the instant invention, which is prima facie evidence of obviousness MPEP 2144.05 I. It would have been obvious to one of ordinary skill in the art to have selected claimed amounts of Si, Fe, Cu, Mg, Ni, Sr, Mn and Al from the amounts disclosed by Kamio et al. in view of Sakamoto et al. because Sakamoto et al. disclose the same utility throughout the disclosed ranges.

Kamio et al. further teach that P in an amount of 0.005-0.02 wt% would be added to the aluminum alloy. One of ordinary skill in the art would have introduced 0.005-0.02 wt% of P into the alloy of Kamio et al. in view of Sakamoto et al. in order to achieve uniform dispersion of primary phase Si and eutectic crystal Si for desired mechanical strength, fatigue strength and abrasion resistance of the aluminum alloy, as taught by Kamio et al. (section 0009)

Regarding claim 11, Kamio et al. disclose the forged aluminum alloy exhibits excellent fatigue strength at high temperature (abstract). One of ordinary skill in the art would have expected the percent reduction of high temperature fatigue strength resistance of a portion of the forging material is regulated to 90% or less as claimed.

Claims 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamio et al. (JP 2000265232) in view of Sakamoto et al. (JP 64039339) and Yanagimoto et al. (US 20040261615) as applied to claim 1 above, and further in view of Evans et al. (US7267734).

Regarding claim 13, Sakamoto et al. disclose the casting of the molten aluminum alloy is conducted at 670-850 °C (Page 5, lines 6-7), which overlaps the claimed range MPEP 2144.05 I.

Kamio et al. in view of Sakamoto et al. and Yanagimoto et al. is silent about the casting speed. However, it is well held that discovering an optimum value of a result-effective variable requires only routine skill in the art MPEP 2144.05 II. In the instant case, casting speed is a result effective variable since it affects the intermetallic phases of the alloy, as evidenced by Evans et al. (Column 3, lines 65-67 and Column 4, lines 1-3). Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the casting speed of Kamio et al. in view of Sakamoto et al. Yanagimoto et al. in order to achieve desired intermetallic phases of the aluminum alloy.

Regarding claim 20, Kamio et al. in view of Sakamoto et al. and Yanagimoto et al. is silent about the casting speed. However, it is well held that discovering an optimum value of a result-effective variable requires only routine skill in the art MPEP 2144.05 II. In the instant case, casting speed is a result effective variable since it affects the intermetallic phases of the alloy, as evidenced by Evans et al. (Column 3, lines 65-67 and Column 4, lines 1-3). Therefore, it would have been obvious to one of ordinary skill in the art to have optimized the casting speed of Kamio et al. in view of Sakamoto et al. and Yanagimoto et al. in order to achieve desired intermetallic phases of the aluminum alloy.

***Response to Arguments***

The declaration under 37 CFR 1.132 filed 02/11/11 is insufficient to overcome the rejection of claims 1, 4-5, 8-9, 11-13 and 20 based upon Kamio et al. in view of Sakamoto et al. and Yanagimoto et al. as set forth in the last Office action because:

Applicant tries to establish unexpected results in tensile and fatigue strengths for the claimed Ni and P contents and the pre-heat temperature by comparing alloys with the same compositions subjected to different pre-heat temperatures. However, the Mn content in the comparison examples is 0.15 wt%, which falls beyond the range disclosed by Kamio et al. in view of Sakamoto et al. and Yanagimoto et al. (0.25-1.0 wt%). Since no evidence is provided to show that Mn does not contribute to the tensile or fatigue strength of the alloy, the declaration filed 02/11/11 is insufficient to overcome the rejections.

Applicant's arguments filed 02/11/11 have been fully considered but they are not persuasive.

Applicant argues that Kamio, Sakamoto or Yanagimoto does not teach an aluminum alloy containing both Ni and P as instant claims as amended. However, as stated above, one of ordinary skill in the art would have been motivated to introduce 0.005-0.02 wt% of P into the alloy of Sakamoto et al., which contains Ni, in order to achieve uniform dispersion of primary phase Si and eutectic crystal Si for desired mechanical strength, fatigue strength and abrasion resistance of the aluminum alloy, by the teaching of Kamio et al. (section 0009). Since applicant has not provided any

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evidence to show that incorporating 0.005-0.02 wt% of P into the alloy would have upset the process of Kamio et al. in view of Sakamoto et al. and Yanagimoto et al., applicant's argument is not found convincing.

Applicant's remaining remarks reiterate the arguments present in the declaration, and thus not found persuasive for the reasons set forth above.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to REBECCA LEE whose telephone number is (571)270-5856. The examiner can normally be reached on Monday-Friday 8:00 am - 5:00 pm EST.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, EMILY M. LE can be reached on (571)272-0903. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./

Examiner, Art Unit 1734

/Emily M Le/

Supervisory Patent Examiner, Art Unit 1734